SPECIFICATION AMENDMENTS

Please replace the paragraph on page 4 ll. 9-16 with the following paragraph.

The schematic of the invention is shown in Figure 1. The light coming out of the laser source 100 is phase modulated using a phase modulator 110 (fiber-pigtailed integrated optic circuit in this implementation) which applies a sinusoidal carrier phase modulation to the light coming out of the laser source before it is split by beam splitter 280 between the two legs of the heterodyne interferometer. Each leg is subsequently frequency shifted by frequency shifters 120 to generate a convenient heterodyne frequency $f = (f_2 - f_1)$, where the two beams are polarized orthogonal to each other. The output of each frequency shifter 120 is collimated and combined using a polarizing beam splitter (PBS) 130.

Please replace the paragraph on page 4 line 22 to page 5 line 10 with the following paragraph.

The portions of the p-polarized beam and the s-polarized beam pass through the beam splitter 140 and encounter the polarized beam splitter 170. The p-polarized light is transmitted and serves as an optical phase reference. The s-polarized light is reflected toward the target reflector 190 and is reflected back into the polarized beam splitter 170. The polarization of the returning light is rotated by 90 degrees, because it double-passed a quarter-wave plate 200 oriented at 45 degrees. The beam has been converted to a p-polarized beam by the passage through the quarter-wave plate, and therefore is transmitted by the polarized beam splitter 170 to the reference reflector 210 and returned to the polarized beam splitter 170 as s-polarized light, because it was again rotated by 90 degrees by the second quarter-wave plate 220. At this point, the s-polarized beam is recombined in an optical reference location 290 with the transmitted p-

polarized optical reference beam. A polarizer 230 oriented at 45 degrees mixes the two orthogonally polarized beams and the interference beats are detected by the signal photodetector 240.

Please replace the paragraph on page 7 ll. 6-20 with the following paragraph.

The foregoing is a novel method of pre-processing the heterodyne signal to eliminate self-interference. The self-interference beat, because it results from the target beam not going to the target, does not experience the differential delay and does not generate an intensity modulated signal. Conversely, the target beam, having traveled to the target and experienced the differential delay does generate intensity modulation. The target beam and the local beam are both directed to an optical reference location 290 where the target beam and the local beam are recombined before reaching the signal photodetector 240. The intensity modulation is used to discriminate and isolate the signal coming back from the target from the parasitic self-interference beat resulting from leakage and scatter. The signal coming back from the target is also called a target signal or a true signal. The output of the signal photodetector 240 is mixed with the phase-modulation frequency Ω from the local oscillator 270 at mixer 260, shifting the desired signal down to the heterodyne frequency f and upshifting the self-interference beat into Ω - f and Ω + f. Electronic passband filter 250 at f is used to block the self-interference-induced signals. An important feature of this method is that after down conversion the outputs of the system are identical to that of an ordinary heterodyne interferometer and therefore all previously developed signal processing methods can be employed.

DRAWING AMENDMENTS

Please substitute the attached replacement drawing for Fig. 1. Element 170, a polarizing beam splitter element, has been amended to include a diagonal line corresponding to the graphical description of the other beam splitter elements (130, 140) and in keeping with the traditional graphical depiction of such an element as described in the Specification. Further, the right edge of element 170 has been truncated to correct the appearance of the drawing which now includes the diagonal line in element 170. Fig. 1 was amended to add a beam splitter 280 at the point of splitting the phase modulated light source in accordance with the Specification page 4 ll. 9-12 where the "the laser source 100 is phase modulated using a phase modulator 110 (fiber-pigtailed integrated optic circuit in this implementation) before it is split". Fig. 1 was also amended to identify the region where the target beam and reference beam are recombined as the optical reference location 290. No new matter is added.